WHAT IS CLAIMED IS:

1. A cluster system comprising:

a plurality of computers;

a data storage device;

5   a cluster file system providing exclusive control for maintaining data consistency by using a lock function in order to offer shared access to a file recorded on the data storage device from a process operating on the plurality of computers;

10   cluster shared memory map means for allocating an area for shared memory in an address space of the process and for mapping data of files managed by the cluster file system in the area; and

cluster shared memory lock allocation means for

15   allocating the lock function of the cluster file system to the shared memory and enabling exclusive control for maintaining data consistency on the shared memory.

2. The cluster system according to claim 1, further comprising:

20   access inhibit setting means for inhibiting an access to all pages in the allocated shared memory;

data write means, when accessing the access-inhibited page causes a read page fault, for reading the data mapped to the page from the file recorded on

25   the data storage device and writing the read data; and

setting means for read-enabling the page where the data is written to be readable.

3. The cluster system according to claim 1, further comprising:

access inhibit setting means for inhibiting access to all pages in the allocated shared memory;

data write means, when accessing the access-inhibited page causes a write page fault, for reading the data mapped to the page from the file recorded on the data storage device and writing the read data; and

setting means for read/write-enabling the page where the data is written.

4. The cluster system according to claim 3, further comprising:

means for acquiring a lock, when the cluster shared memory is locked, by access-inhibiting a page in a cluster shared memory area where a file managed by the cluster file system is mapped in the address space for the process; and

means for writing data of an updated page in the cluster shared memory area back to a file managed by the cluster file system when the acquired lock is unlocked.

5. A memory access control method applied to a cluster system having a plurality of computers, a data storage device, and a cluster file system providing exclusive control for maintaining data consistency by means of a lock function in order to allow shared access from a process operating on the plurality of

computers to a file recorded in the data storage device, the method comprising the steps of:

allocating an area for shared memory in an address space of the process and mapping data of files managed by the cluster file system in the area; and

allocating the lock function of the cluster file system to the shared memory and enabling exclusive control for maintaining data consistency on the shared memory.

6.   The memory access control method according to claim 5, further comprising the steps of:

inhibiting an access to all pages in the allocated shared memory;

when accessing the access-inhibited page causes a read page fault, reading the data mapped to the page from the file recorded on the data storage device and writing the read data; and

read-enabling the page where the data is written to be readable.

7.   The memory access control method according to claim 5, further comprising the steps of:

inhibiting access to all pages in the allocated shared memory;

when accessing the access-inhibited page causes a write page fault, reading the data mapped to the page from the file recorded on the data storage device and writing the read data; and

read/write-enabling the page where the data is written.

8. The memory access control method according to claim 7, further comprising the steps of:

acquiring a lock, when the cluster shared memory is locked, by access-inhibiting a page in a cluster shared memory area where a file managed by the cluster file system is mapped in the address space for the process; and

writing data of an updated page in the cluster shared memory area back to a file managed by the cluster file system when the acquired lock is unlocked.

9. A recording medium storing computer-executable program code for memory access control in a cluster system having a plurality of computers, a data storage device, and a cluster file system providing exclusive control for maintaining data consistency by means of a lock function in order to allow shared access from a process operating on the plurality of computers to a file recorded in the data storage device, the program code comprising:

means for causing a computer to allocate an area for shared memory in an address space for the process and map data of a file managed by the cluster file system to the area; and

means for causing a computer to allocate the lock function of the cluster file system to the shared

memory and enable exclusive control for maintaining data consistency on the shared memory.

10. The recording medium according to claim 9, wherein the program code further comprises:

means for causing a computer to inhibit access to all pages in the allocated shared memory;

means for causing, when accessing the access-inhibited page causes a read page fault, a computer to read the data mapped to the page from the file recorded on the data storage device and write the read data; and

means for causing a computer to read-enable the page where the data is written to be readable.

11. The recording medium according to claim 9, wherein the program code further comprises:

means for causing a computer to inhibit access to all pages in the allocated shared memory;

means for causing, when accessing the access-inhibited page causes a write page fault, a computer to read the data mapped to the page from the file recorded on the data storage device and write the read data; and

means for causing a computer to read/write-enable the page where the data is written.

12. The recording medium according to claim 11, wherein the program code further comprises:

means for causing a computer to acquire a lock, when the cluster shared memory is locked, by access-inhibiting a page in a cluster shared memory area where

a file managed by the cluster file system is mapped in the address space for the process; and

means for causing a computer to write data of an updated page in the cluster shared memory area back to a file managed by the cluster file system when the acquired lock is unlocked.